

<i>Honey Bee</i>	<i>Treatments</i>		
<b>Pest of Concern</b>	<b>Treatment</b>	<b>Formulation</b>	<b>Remarks</b>
American Foulbrood <b>(AFB)</b> <i>Paenibacillus larvae</i>  (Bacterial disease, spore forming)	Preventative Fall/Spring  <b>Terramycin</b> (Oxytetracycline)	<b>TM-Patty (2 patties)</b> Terramycin (TM-25) – use 2 Tablespoons + 2 teaspoons; use 2/3 cup of vegetable shortening; use 1 1/3 cup of granulated sugar; wax paper.	This makes enough to treat two colonies. Previously, only 2 Tablespoons of TM-25 were used in the mixture, providing about 600 mg. of terramycin per patty. The more recent recommendations have been to increase the amount of terramycin per patty to 800 mg. (Mann Lake Ltd. sells their patties with 1000 mg. of terramycin). This means that each patty will have 1/3 more terramycin in it; this is why the recipe for 2 patties now contains the extra 2 teaspoons of terramycin (2 Tablespoons + two teaspoons). One can make 12 patties from a 6.4 oz. Package of TM-25 by mixing it with 1 lb. vegetable shortening and 2 lbs. of sugar. Mix the TM-25 and the sugar together thoroughly and then mix in the shortening. Divide the mixture into two equal parts and place each part between sheets of wax paper. Press the mixture into a 1/4 inch or less pancake. Place one patty on the top bars over the brood nest and make slits in the wax paper for the bees to start eating the mixture. Unused patties can be frozen.
	AFB Prevention  <b>Terramycin</b> (Oxytetracycline)	<b>Dusting</b> with terramycin and confectioner's sugar, TM-50 1 part: 10 parts confectioner's sugar TM-25 1 part: 3 parts confectioner's sugar.	Mix terramycin powder with powdered confectioner's sugar. Dust three level tablespoons of the mixture around the outside edges of the top bars in each of the brood chambers. Feed this mixture 4 times at weekly intervals in March. Previously, it was fed 3 times. Each feeding is approximately 200 mg. of terramycin, so 3 feedings would be 600 mg. of terramycin. The recent recommendations are for 800 mg. of terramycin so 4 feedings are required.
	AFB "Control"  <b>Tylan</b> (Tylosin tartate)	<b>Dusting only!</b>	Honeybee colonies should receive three treatments administered as a dust in confectioners/powdered sugar. The 200 mg dose is applied over the top bars of the brood chamber once weekly for three weeks.  Control is a misnomer. It kills the vegetative stage but is ineffective on spores. Used when a beekeeper has terramycin resistant AFB colonies. Will not eliminate the disease.
	Eradication of AFB if found	Use TM patties or dusting with powder on all colonies in the apiary. Do not use powder if in or near a honey flow period.	If AFB is present in colonies, contact the State Apiarist for help at 615-837-5342.  If AFB infection is not severe and only a few cells of diseased brood are present, then: Move the bees onto undrawn foundation in clean equipment and feed sugar syrup and place terramycin patties on colony. Take the diseased brood comb and dig a pit and burn them. Bury the remains. The other equipment on the colony should be treated as follows. Destroy by burning all wax present in a pit and bury. Boil all contaminated woodenware in a solution of 1 lb. lye to 10 gallons of water. Boil for 20 minutes. <b>Caution</b> – lye is extremely caustic and burns can result from contact with it. Rinse all equipment after boiling with fresh water to remove lye residue.  If AFB infection is severe and many cells and complete combs contain diseased brood, then: kill the bees, dig a pit, and burn all combs, bees and equipment. Cover the pit with dirt. Contaminated honey should never be fed back to bees. It can be removed first and sold for human consumption.

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<b>European Foulbrood</b> (EFB) <i>Melissococcus plutons</i> (Bacterial disease, Non-spore forming)	<b>Terramycin</b> (Oxytetracycline)	See Remarks	The same treatment above for AFB will prevent EFB. The use of terramycin kills the bacteria. EFB is non-spore forming.
<b>Nosema</b> <i>Nosema apis</i> or <i>Nosema ceranae</i> (Spring Dwindling disease) (protozoan disease)	Prevention and Medication  <b>Fumidil-B</b> (Fumagillin)	Fumadil-B: 1 teaspoon in 1 gallon of sugar syrup	Mix 1 teaspoon of Fumadil-B in a cup of warm (not hot) water. Shake vigorously to get Fumadil powder into solution. Add this to 1 gallon of sugar syrup. In the spring, feed 1 gallon of this medicated syrup and in the fall feed 2 gallons of medicated syrup.
<b>Tracheal Mites</b> ( <i>Acarapis woodi</i> )	Treatment to lower populations. Apply once a month all year.	Oil or Grease patties	Use the same formula above as used for TM-patties only leave out the terramycin.
	Treat colonies in late summer (by August 10 <sup>th</sup> )	<b>Mite-A-Thol</b> Menthol Crystals	Place 1.8 oz. Menthol packet on each colony in late summer. Do not place over the brood nest. Place to one side on the top bars. If the colony is in full sun, place on bottom board to the back. Reduce the entrance with a reducer and close the ventilation in the top of the colony and any holes in the equipment. This allows for proper colony fumigation.
	Treat colonies in Spring and Fall.	<b>Miteaway II</b> Formic Acid	Follow the instruction on the label provided when this product becomes available this year.
<b>Varroa Mites</b> <i>Varroa destructor</i>	Treat colonies in late summer just after pulling off surplus honey, also in early spring prior to the honey flow.	<b>Apistan</b> Strips. (Fluvalinate)	Use 2 strips in each brood chamber that contain bees. Hang the strips between frames on the edge of the bee cluster. Apistan strips must be in contact with brood nest bees at all times during treatment period. If two brood chambers are used for brood nest, hang the Apistan strips in alternate corners of the cluster in each of the supers. For best chemical distribution, use Apistan strips when daytime temperatures are at least 50°F. Effective control may be achieved by treating colonies in the spring before the first honey flow and in the fall after the honey flow. Allow strips to remain in the colony for a minimum of 42 days (6 weeks) but remove before 56 days (8 weeks).
	Treat colonies in late summer/fall	<b>CheckMite+</b> Strips (Bayer Bee Strips, ( <b>coumaphos</b> ) strips)	Use in 2008 is pending EPA approval of Section 3 application. These strips are used similar to Apistan. Use 2 strips per brood chamber when no honey is being made. The active compound, coumaphos, is an organo-phosphate and should be handled carefully. Wear gloves and follow the manufacturer's recommendations. The strips should be left in for 42 – 45 days. These strips will kill any varroa mites that are resistant to Apistan strips (fluvalinate). No wax from the brood area of treated colonies can be sold, it must be destroyed.
	Treat colonies in late summer/ early fall	<b>Api Life Var</b> ( <b>Thymil, eucalyptol, menthol</b> )	Break 1 tablet into 4 pieces. Place near 4 corners of brood. Repeat 3 times (7-10 day intervals, last treatment at 12 days). Use when temperatures are 68 degrees F. to 86 Degrees F.  It is a fumigant - don't use open-screen bottoms. Don't use with honey supers in place.

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<b>Varroa Mites (continued)</b> <i>Varroa destructor</i>	See Note	<b>Hivastan</b> (Fenpyroximate) Section 18 pending (7/7/07)	Form material into 8 oz. Patties and lay on top of brood frames. Best results occur when the colonies are brood free. Apply anytime of day, twice a year. Do not apply during honey flow.
<b>Varroa Mites</b> <i>Varroa destructor</i>	See Note	<b>Apiguard</b> (Thymol)	Two 50 gram trays per hive, add the second tray after 14 days. Use after honey flow. Best results occur when daily maximum temperature is above 60 F.
	See note	<b>Sucrocide</b> (Avachem sucrose octanoate)	Apply with calibrated sprayer! 1.5 fl. Oz. Of total mix volume on each deep frame of bees. Approx. 2-3 passes, 1-2 seconds per side of frame, depending on sprayer calibration. Note. Bee toxicity starts at 3 times recommended rate. Don not apply to winter cluster or at temperatures below 55 degrees F. Apply at 7-10 day intervals, up to 3 times. Do not apply to feeding water system.
<b>The Small Hive Beetle (SHB)</b>	Treat colonies when the temperature is above 70°F for adult beetles.	<b>CheckMite+</b> Strips (Cumophos)	Again these strips are available to Tennessee residents until February, 2008. Use in 2008 is pending EPA approval of Section 3 application For the SHB, a strip is cut in half and one-half is stapled to a piece of 4 in. by 4 in. cardboard that has had one side peeled off. The cardboard with the strip face down is placed in the middle of the bottom board for up to 7 days. Two treatments a year are allowed. Adult SHB upon entering the hive will hide under the cardboard and be killed. Follow the manufacturer's directions. Gardstar® insecticide may be used as a ground treatment around colonies to kill any larvae that may be pupating in the soil.
<b>The Small Hive Beetle (SHB) in the honey house</b>	Cultural		Keep honey house clean. Extract every 2-3 days or weekly. Don't store supers with brood. Increase air flow with fans; lower humidity with dehumidifiers. Refrigerate/freeze brood supers. 10F. for 24 hours kills all life stages of small hive beetle.
<b>Wax Moth</b>	Treat empty dry comb only.	<b>Para Moth</b> (100% <i>para dichlorobenzene</i> , PDB) (not moth balls which are naphthalene).	The supers should be stacked as tightly as possible. Special precaution should be taken to ensure that the gas, which is heavier than air, cannot escape at the bottom of the stack. A few newspapers on the floor at the bottom of the stack will work. Tape all cracks between supers. Do not fumigate more than 5 deep supers or 10 shallow supers at a time. To each stack, add 6 tablespoons (3 oz.) of Para Moth crystals on the top bars separated by a piece of cardboard. Then put a top cover on tightly. The stacks should be checked for crystals at intervals of every 2 to 3 weeks. Add crystals when little or none are present. Para Moth only kills the larvae (weevils) and not the eggs, and this is why it must be present at all times during storage.
	Treat empty dry comb only.	Cold Treatment	Freeze supers for 12 hours and let supers re-warm in an area free of wax moths. Then put the supers in plastic garbage bags and seal tightly.

## Calendar of Treatments

January	February	March	April	May	June	July	August	September	October	November	December
VEG. PATTY	TM PATTY or VEG. PATTY & TM Powders	VEG. PATTY	VEG. PATTY	VEG. PATTY	VEG. PATTY	VEG. PATTY	TM PATTY or VEG. PATTY & TM Powders	VEG. PATTY	VEG. PATTY	VEG. PATTY	VEG. PATTY
** APISTAN STRIPS or CHECKMITE+ STRIPS or HIVISTAN (see note) or API LIFE VA or APIGUARD And/Or Miteaway II (FORMIC ACID)		Section 18 expired Feb./2008  Section 18 Has not been granted as of 7/7/07				** APISTAN STRIPS or CHECKMITE+ STRIPS or HIVASTAN ( see note) or API LIFE VAR or APIGUARD And/Or Miteaway II (FORMIC ACID)				Section 18 expired Feb. /2008  Section 18 pending Has not been granted as of 7/7/07	
		FUMADIL-B						MENTHOL PACKET		FUMADIL-B	

### Disclaimer:

- These are only recommendation – always follow all label directions. The above listed application instructions are only short summaries, please read the product label thoroughly before applying any treatments. Listing of a product does not infer endorsement by the TN Department of Agriculture. Omissions are not intended to discriminate against registered products.

### Treatment Summary:

- TM patties in early spring and late summer or early fall for the prevention of **AFB**.
- Place vegetable shortening patties on colonies once a month – keeps **tracheal mite** population below 20%.
- Place Menthol packet in colonies in mid-August to control **tracheal mites**.
- THE USE OF **FORMIC ACID** WILL ELIMINATE THE NEED FOR MENTHOL PACKETS AND VEGETABLE SHORTENING PATTIES (**tracheal mite** prevention) BUT NOT THE NEED FOR TM PATTIES (**AFB** prevention).
- Place Apistan, CheckMite+, Api Life Var, or Apiguard in colonies shortly after you pull off honey from colonies in late summer or early fall and in early spring for **varroa mite** control.

\* Put Apistan on colonies a minimum of 6 weeks prior to honey flow.

\*\* Place Apistan on colonies as soon as honey supers are removed.

\*\*\*Use only EPA approved chemicals and follow all label directions.

## **Addresses of Interest**

**Commissioner of Agriculture** – Ken Givens, P. O. Box 40627, Melrose Station, Nashville, TN 37204, ph: 615-837-5100.

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